Alcohol and Cancer in the United States

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Definitions

• 1 drink = ~14 g pure alcohol (1.5 oz distilled spirits, 5 oz wine, 12 oz regular beer)
  • *varies by country

• High risk drinking = binge and heavy drinking

• Binge drinking = 4+ females at one occasion, 5+ males
  • 13% of US adults in the last year

• Heavy drinking = 8+ per week females, 15 + per week males

• Moderate drinking = up to 1/d for females,
  up to 2/d males

“Rethinking Drinking,” National Institute of Alcohol Abuse and Alcoholism
Alcoholism is on the rise
Rate of alcohol use disorder (alcoholism) among U.S. adults age 18 and older

Grant, Chou, Saha, et al, JAMA Psychiatry, 2017

Figure 7. Prevalence of heavy episodic drinking among current drinkers (%; 15+ years), 2010

Global status report on alcohol and health WHO 2014
Fig 2 | Age adjusted mortality (per 100,000 Americans) attributable to cirrhosis and hepatocellular carcinoma in each state for the first (1999), middle (2008), and last (2016) year of study. States in white imply data that are unreliable or suppressed to protect patient identity.
Why put this statement out now?

- National Cancer Opinion Survey
  - ASCO and Harris online poll 4,016 US adults
  - 4% had cancer themselves
  - 32% had an immediate family member with cancer
- Only 30% were aware of alcohol as cancer risk factor
  - (78% for tobacco and 66% for sun/UV)
- Only 38% limit their alcohol consumption to reduce cancer risk

More evidence of a lack of awareness

Which of the following health conditions do you think can result from drinking too much alcohol?

- Cancer:
  - Yes: 36.6%
  - No: 34.1%
  - Don't know: 20.9%

- Heart Disease:
  - Yes: 27.8%
  - No: 51.4%
  - Don't know: 12.9%

- Diabetes:
  - Yes: 30%
  - No: 47.4%
  - Don't know: 14.1%

- High Cholesterol:
  - Yes: 37.4%
  - No: 32.1%
  - Don't know: 20.2%

- Liver disease:
  - Yes: 2.4%
  - No: 87.5%
  - Don't know: 7%

- Being overweight or obese:
  - Yes: 16.9%
  - No: 67.6%
  - Don't know: 8.1%

Data source: NHATS, National Cancer Institute, NHATS-FDA 2017. All data are Estimated US Adult Population.
Awareness of alcohol as a carcinogen increases support for alcohol control policies.

Epidemiology of alcohol use

- Globally alcohol causes 5.5% of new cancer diagnoses
  - Up from 3.6%
- Globally alcohol causes 5.8% of all cancer deaths
  - Up from 3.6%
- In US, 3.2-3.7% of cancer deaths are attributable to alcohol
  - Approximately 21,000 per year
  - Absolute numbers: breast (5518-7310), H+N (2347-4497), esophagus (1233-2716), CRC (1987-5467)

Predictors of heavy alcohol use

- Youth drinking
  - 22.8% of US youth 12-20 yo currently drink, 13% heavy or binge drink, 6% have DSM IV alcohol use disorder
- Younger age
- Male gender (RR 2.4)
- Not being married (RR 1.4)
- Genetics
- Race/ethnicity
- Sexual orientation (RR 2.55)
- Smoking (RR 3.4)

Drinking guidelines

- American Cancer Society
- American Heart Association
- US Department of Health and Human Services

All basically the same:

- No more than 2/d for males and 1/d for females and no binging
- No drinking under legal age
- If you don’t drink, do not start for any reason
- Never drink while pregnant

What cancers?

- Oral cavity/pharynx/larynx
- Esophagus (squamous cell)
- Female breast
- Colorectum
- Liver
- (Maybe: lung, pancreas, gastric)

- Take home point: “The more a person drinks, and the longer the period of time, the greater their risk of development of cancer, especially head and neck cancers”

Magnitude of the association

<table>
<thead>
<tr>
<th>Type of Cancer</th>
<th>Nondrinker</th>
<th>Light Drinker</th>
<th>Moderate Drinker</th>
<th>Heavy Drinker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral cavity and pharynx</td>
<td>1.0 (referent)</td>
<td>1.13 (1.0 to 1.26)</td>
<td>1.83 (1.62 to 2.07)</td>
<td>5.13 (4.31 to 6.10)</td>
</tr>
<tr>
<td>Esophageal squamous cell carcinoma</td>
<td>1.26 (1.06 to 1.26)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Larynx</td>
<td>1.0 (referent)</td>
<td>0.87 (0.68 to 1.11)</td>
<td>1.44 (1.25 to 1.66)</td>
<td>2.65 (2.19 to 3.19)</td>
</tr>
<tr>
<td>Liver</td>
<td>1.0 (referent)</td>
<td>1.00 (0.85 to 1.18)</td>
<td>1.08 (0.97 to 1.20)</td>
<td>2.07 (1.66 to 2.58)</td>
</tr>
<tr>
<td>Female breast</td>
<td>1.0 (referent)</td>
<td>1.04 (1.01 to 1.07)</td>
<td>1.23 (1.19 to 1.28)</td>
<td>1.61 (1.33 to 1.94)</td>
</tr>
<tr>
<td>Colorectum</td>
<td>1.0 (referent)</td>
<td>0.99 (0.95 to 1.04)</td>
<td>1.17 (1.11 to 1.24)</td>
<td>1.44 (1.25 to 1.65)</td>
</tr>
</tbody>
</table>

NOTE. Adapted from results of Bagnardi et al (2015).28
Does decreasing alcohol use decrease cancer risk?

- Yes, for head and neck and esophageal cancer
  - Appears to take 20 years
- Unclear for other cancers
  - Especially conflicting for breast cancer risk
  - No effect in BRCA carriers, for example
- Critical area of needed further research

Mechanisms

- Group 1 carcinogen by WHO
- Acetaldehyde direct contact to tissues
  - ALDH2 variants (rs671)*2
- Lower folate concentrations/absorption
- Increased estrogens/androgens
  - “window” theory for younger women
- Cirrhosis

Disparities in alcohol use and cancers

- American Indian and Alaska Natives
  - 12 yo+ binge rate 28%
  - Alcohol plays a role in 11% of AN/AI deaths

- Blacks and Hispanics have higher rates of abstinence, but when either population does drink, more alcohol is consumed and binge rates are higher
  - Both groups may be more sensitive to developing alcohol-related liver disease
  - This needs further research

- Socioeconomic status
  - Higher is worse

- LGBTQI
  - 2-3x higher rates of alcohol use, abuse, alcoholism

- Women less likely to use alcohol treatment services
Effects of drinking on recurrence and mortality

- Increased head and neck cancer mortality, second cancer and recurrence in drinkers
  - Cancer specific mortality among moderate drinkers after diagnosis RR 1.79, heavy drinkers 3.63
  - 3x increased risk of secondary H+N cancer if continue to drink

- Breast cancer unclear effect (see table)

- Area of needed further research

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Special pop’n</th>
<th>Effect size recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collab Br Ca Study</td>
<td>22,980</td>
<td>None</td>
<td>0.85</td>
</tr>
<tr>
<td>Danish</td>
<td>1,052</td>
<td>&gt;2 drinks/d</td>
<td>1.65</td>
</tr>
<tr>
<td>After BrCa Pooling Project</td>
<td>9,329</td>
<td>None</td>
<td>0.83 (NS)</td>
</tr>
<tr>
<td>After BrCa Pooling Project</td>
<td>7,027</td>
<td>ER+, postmeno</td>
<td>1.19</td>
</tr>
</tbody>
</table>

How does alcohol affect cancer treatment?

- Increased risk of osteoradionecrosis of the jaw (head and neck cancer)
- Longer hospitalizations
- Increased surgical procedures
- Prolonged recovery
- Higher health care costs
- Higher 30 d mortality after lung cancer surgery (RR 1.99)
- Higher anastomotic complications (colorectal)
- Increased comorbidities from prior alcohol use which increases surgical risk

Barriers

- Low provider knowledge
- Providers that use alcohol are less likely to counsel patients about alcohol
- Burnout strongly associated with alcohol use
- “Heart health” myth continues

No wonder people are confused!

Associations of usual alcohol consumption with all-cause mortality and the aggregate of cardiovascular disease in current drinkers (from Wood 2018)

Weighted relative risk for all attributable causes, by drinks consumed per day (from GBD 2018)

Public health strategies endorsed in ASCO statement to decrease high-risk alcohol consumption

- Clinical strategies of alcohol screening and brief intervention
- Regulate alcohol outlet density
- Increase alcohol taxes and prices
- Enhance enforcement of laws prohibiting sales to minors
- Restrict youth exposure to alcohol advertising
- Resist privatization of retail alcohol sales in communities with current government control
- Include alcohol control strategies in comprehensive cancer control plans
Logical partner: CDC state Comprehensive Cancer Control Programs

A collaborative and strategic approach that brings partners together to combine, share, and coordinate resources to reduce the burden of cancer across the whole continuum from prevention through end of life.

Henley, Alcohol Alcohol, 2014
WI Comprehensive Cancer Work

- Action Plan – Increasing awareness of the connection
- Policy Agenda – Supporting environmental approaches to reduce excessive drinking (aligned with ASCO recommendations)
Pinkwashing
Future directions for ASCO

- Annual meeting education session at 2018 annual meeting
- Educational Book manuscript
- Podcasts and video chat
- Participation in alcohol control symposiums
Media attention

Drinking Alcohol Can Raise Cancer Risk. How Much Is Too Much?

Cancer Doctors Cite Risks of Drinking Alcohol

Looking for news you can trust? Subscribe to our free newsletters.

Credit: Credit: Tony Cenicola/The New York Times

The American Society of Clinical Oncology, which represents many of the nation’s top cancer doctors, is calling attention to the ties between alcohol and cancer. In a statement published Tuesday in...
The Lancet editorial

Alcohol and cancer

The Nov 7 publication of Alcohol and Cancer: a Statement of the American Society of Clinical Oncology (ASCO) emphasises the prominence of alcohol as a proven cause of many cancers. This view is not novel and comes exactly 30 years after a working group of the International Agency for Research on Cancer determined that alcoholic beverages were carcinogenic to humans. It has been echoed by other cancer societies since then but seemingly ignored by the wider medical community and by society. The influential endorsement by ASCO provides a powerful impetus to act on decades of evidence that alcohol harms health.

Alcohol is causally linked to upper aerodigestive tract cancers (oral cavity, pharynx, larynx, oesophagus) and those of the colon, liver, and female breast. Associations exist for many other types of cancer, but the precise role of alcohol requires further research to be fully disentangled from ecological and lifestyle factors. Historical assertions Europe is the region of greatest consumption and has the heaviest burden of alcohol-related cancers. One estimate of annual consumption in the UK for 2016 was 12 L of pure alcohol for individuals aged 15 years or older. Populations in eastern Europe drank even more. Beyond cancer, alcohol has widespread and insidious effects throughout the body and mind, leading to profound adverse social consequences. The Global Burden of Disease Study 2016 ranked alcohol as the seventh leading cause for disability-adjusted life-years (4.2%) and death (5.2%).

In the UK, where classification of alcohol-specific deaths has been narrowed, there were 7327 registered deaths in 2016, an age-standardised rate of 11.7 per 100,000.

The ASCO statement takes the health consequences of alcohol beyond the dawn of understanding to the full light of day: alcohol is an undeniable menace to health. Yet it is also culturally bound to the behaviours of almost 2 billion people, for whom, in the coming weeks,
Alcohol and Cancer: A Statement of the American Society of Clinical Oncology

Overview of attention for article published in Journal of Clinical Oncology, November 2017

Title: Alcohol and Cancer: A Statement of the American Society of Clinical Oncology
Published in: Journal of Clinical Oncology, November 2017
DOI: 10.1200/jco.2017.76.1155
Pubmed ID: 29112463
Authors: Noelle K. LoConte, Abenaa M. Brewster, Judith S. Kaur, Janette K. Merrill, Anthony J. Alberg
Abstract: Alcohol drinking is an established risk factor for several malignancies, and it is a potentially...

The data shown below were collected from the profiles of 538 tweeters who shared this research output. Click here to find out more about how the information was compiled.
Take home points

• Talking points
  • Alcohol use increases the risk of at least seven different cancers.
  • Even low levels of drinking can increase cancer risk, but the greatest risk is with heavy, long-term use.
  • Policy strategies that are shown to reduce excessive drinking – heavy, underage, and binge drinking - have the potential to decrease the burden of cancer across Wisconsin.
  • To reduce your cancer risk, drink less. If you do not drink, do not start.

• There is a hunger out there to discuss this issue – let’s capitalize on that. But let’s also be consistent in our messaging
Areas of suggested future research

- How does decreasing alcohol use affect future cancer risk?
- Evaluate increased sensitivities to alcohol-related liver disease from alcohol in Black and Hispanic populations.
- What effect does continuing to drink have on cancer and cancer recurrence, especially for non-head and neck cancers?
- What effect does drinking have on cancer care delivery (chemotherapy dose intensity, side effects, radiation side effects and effectiveness)?
Thank you!

Online resources:

  • Second one coming soon
  • Video coming soon

• ASCO Educational Book manuscript (freely available) http://ascopubs.org/doi/full/10.1200/EDBK_200093

• Sample FAQ: https://wicancer.org/wp-content/uploads/Alcohol-and-Cancer-FAQ_design_FINAL.pdf

• Good “Science Friday” podcast about alcohol and cancer and the complexities of doing trials in this space: https://www.sciencefriday.com/segments/will-we-ever-know-how-moderate-drinking-affects-our-health/